Headquarters U.S. Air Force

Integrity - Service - Excellence

Sustainability in Air Force Programs ...and What *You* Can Do

Presented to STAEP, 29 Oct 2003
Karen Kivela
Air Force Center for Environmental Excellence

(SLIDES UPDATED, 22 Apr 04)

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Overview

- ***Defining Sustainability***
- ***Air Force Initiatives***
  - Tools
  - Program efforts
- ***Making it Personal***
  - What you can do at home
  - Frameworks for sustainable business

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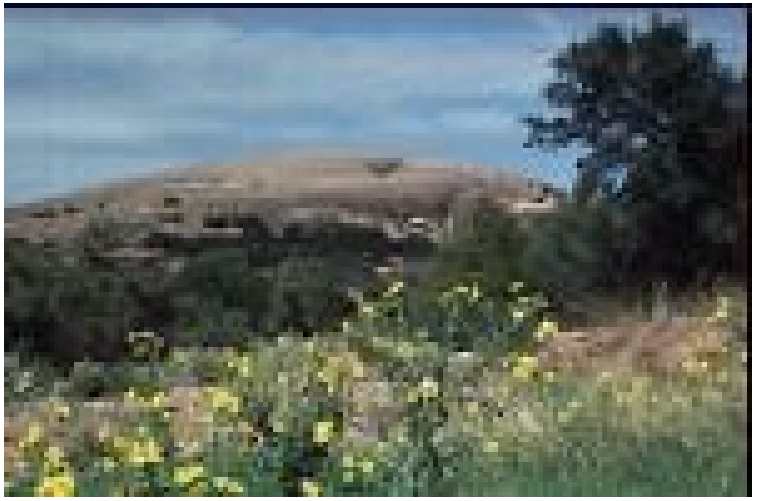
Defining Sustainability

Everyone has their own favorite definition



Recognized globally as
"meeting the
needs of the present
without compromising the
ability of future generations to
meet their own needs"

My definition for Air Force audiences:

"The ability to operate into the future without decline – either in the mission or the natural systems that support it"

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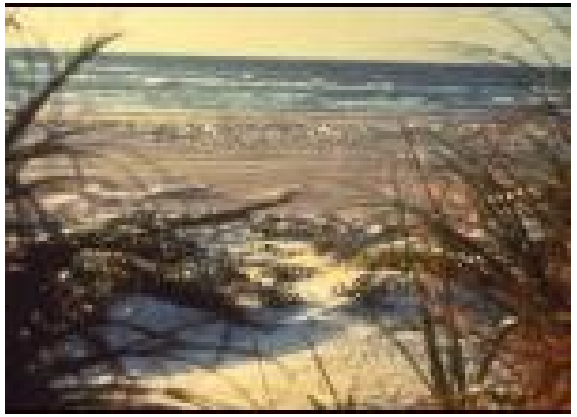
Key Sustainability Concepts

- ***The "Triple Bottom Line" –*** People, Profits, Planet
- ***"Corporate Citizenship"***
- ***A goal shift in environmental management –*** shifting from compliance and pollution prevention to a broader, holistic view
- ***Focusing on the*** ***right issues*** to prevent problems, not just pollution



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Preventing Problems, Not Just Pollution

What could happen if an installation did not consider regional trends in…

- **Availability of waste management services**
- **Water quality and availability**
- **Energy supply**
- **Endangered species populatio and distribution**
- **Land use and growth in the surrounding communities**
- **Transportation systems**

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These are Cross-Cutting Issues…

Sustainability has been called "P2 on steroids"

- *If you are thinking "But these aren't just environmental issues" - you're right!*
- *We asked ourselves these questions:*
  - Have we already done most of what we can do for pollution prevention and environmental compliance?
  - What's the next step?
  - Is it time to look outside our stovepipes for integrated solutions to long term issues?
  - What should our new focus be?
- *The ultimate goal is long-term mission effectiveness – or "sustainability"*

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Building an Integrated Team

AFCEE's integrated team includes a variety of interested people:

- Planners and natural/cultural resource managers
- Architects and engineers
- Pollution prevention and EMS specialists
- Regional Environmental Offices – experts who are familiar with local implementation issues

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Air Force Initiatives

- ***Green Building***
  - Policy and tools
  - Pilot projects

- ***Expanding to Address Operational Sustainability***
  - Action plans
  - Rolling sustainability into the Master Planning process
  - Building an EMS based on sustainability

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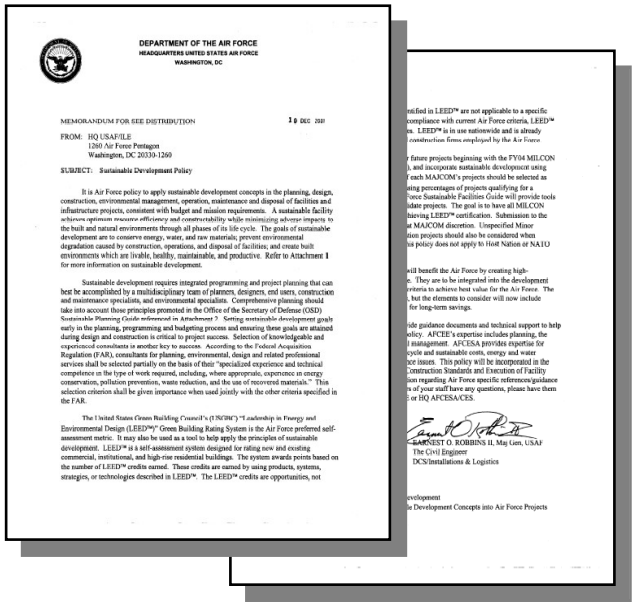
AF Sustainable Development Policy

Civil Engineering policy letter - 19 Dec 01

"It is Air Force policy to apply sustainable concepts in the planning, design, construction, environmental management, operation, maintenance and disposal of facilities and infrastructure projects, consistent with budget and mission constraints."



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

MEMORANDUM FOR SEE DISTRIBUTION

FROM: HQ USAF/ILE
1260 Air Force Pentagon
Washington, DC 20330-1260

SUBJECT: Sustainable Development Policy

It is Air Force policy to apply sustainable development concepts in the planning, design, construction, environmental management, operation, maintenance and disposal of facilities and infrastructure projects, consistent with budget and mission requirements. A sustainable facility achieves optimum resource efficiency and constructability while minimizing adverse impacts to the built and natural environments through all phases of its life cycle. The goals of sustainable development are to conserve energy, water, and raw materials; prevent environmental degradation caused by construction, operations, and disposal of facilities; and create built environments which are livable, healthy, maintainable, and productive. Refer to Attachment 1 for more information on sustainable development.

Sustainable development requires integrated programming and project planning that can best be accomplished by a multidisciplinary team of planners, designers, end users, construction and maintenance specialists, and environmental specialists. Comprehensive planning should take into account those principles promoted in the Office of the Secretary of Defense (OSD) Sustainable Planning Guide referenced in Attachment 2. Setting sustainable development goals early in the planning, programming and budgeting process and ensuring these goals are attained during design and construction is critical to project success. Selection of knowledgeable and experienced consultants is another key to success. According to the Federal Acquisition Regulation (FAR), consultants for planning, environmental, design and related professional services shall be selected partially on the basis of their "specialized experience and technical competence in the type of work required, including, where appropriate, experience in energy conservation, pollution prevention, waste reduction, and the use of recovered materials." This selection criterion shall be given importance when used jointly with the other criteria specified in the FAR.

The United States Green Building Council's (USGBC) "Leadership in Energy and Environmental Design (LEED™)" Green Building Rating System is the Air Force preferred self-assessment metric. It may also be used as a tool to help apply the principles of sustainable development. LEED™ is a self-assessment system designed for rating new and existing commercial, institutional, and high-rise residential buildings. The system awards points based on the number of LEED™ credits earned. These credits are earned by using products, systems, strategies, or technologies described in LEED™. The LEED™ credits are opportunities, not

- LEED™ is identified as the AF-preferred self-assessment metric
- Goal: All MILCON projects in the FY09 program capable of achieving LEED™ certification, starting with 20% of each command's FY04 projects

Application for actual LEED™ certification is at MAJCOM discretion

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Technical Support

Sustainable Development Guide on AFCEE web site

Defines and supports the AF facility delivery process

"Whole Building Design Guide" http://www.hqafcee.brooks.af.mil/dc/dcg/index.html

Technical resources for Sustainable, Aesthetic, Secure, and other design concerns -- **www.wbdg.org**

New Web-based Training

Part of AFCEE Web University - **www.webu.brooks.af.mil**

Other Web Page Resources

www.afcee.brooks.af.mil/eq/programs/progpage.asp?PID=27

www.afcee.brooks.af.mil/products/so

USAF Sustainable Facilities Guide

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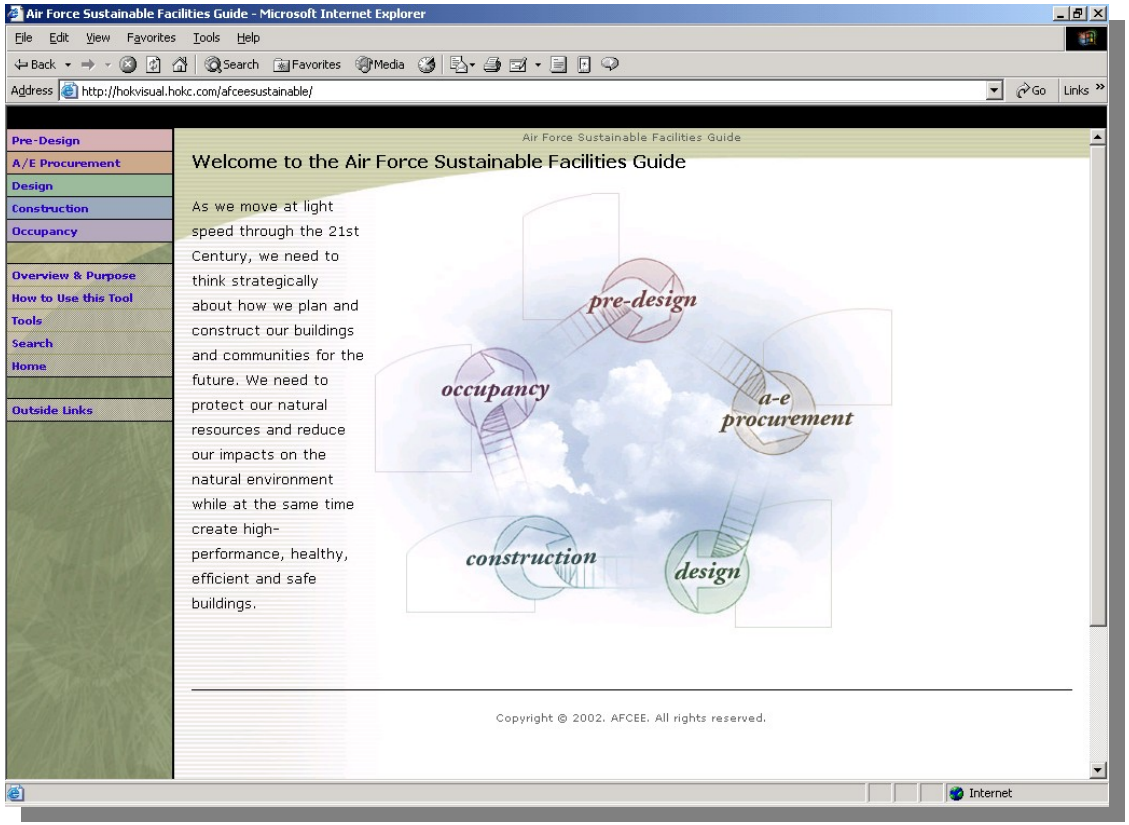
- Web-based , replaces “USAF Environmentally Responsible Facilities Guide” hard-copy book
- Process-focused tools and resources for the entire life cycle
- The Whole Building Design Guide (WBDG) provides ***technical*** resources to complement the ***process*** guidance in the USAF Guide


Air Force Sustainable Facilities Guide - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://hokvisual.hokc.com/afceesustainable/
Pre-Design
A/E Procurement
Design
Construction
Occupancy
Overview & Purpose
How to Use this Tool
Tools
Search
Home
Outside Links
Air Force Sustainable Facilities Guide
Welcome to the Air Force Sustainable Facilities Guide
As we move at light speed through the 21st Century, we need to think strategically about how we plan and construct our buildings and communities for the future. We need to protect our natural resources and reduce our impacts on the natural environment while at the same time create high-performance, healthy, efficient and safe buildings.
pre-design
occupancy
a-e procurement
construction
design
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Internet

- LEED™ Rating System used as organizational framework
- **http://www.afcee.brooks.af.mil/dc/dcd/arch/rfg/index.html**

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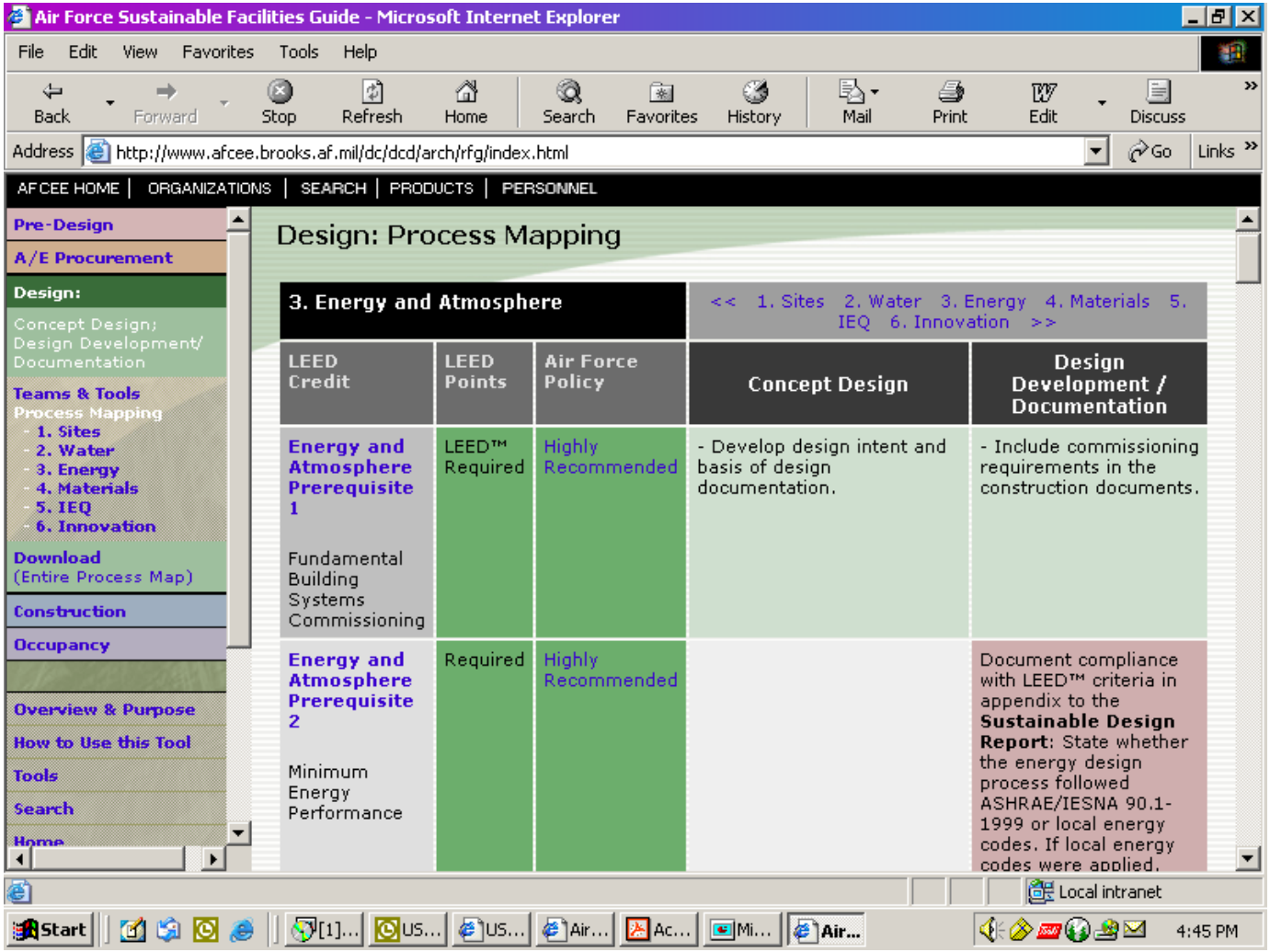
A Matrix Based on LEED™ Credits



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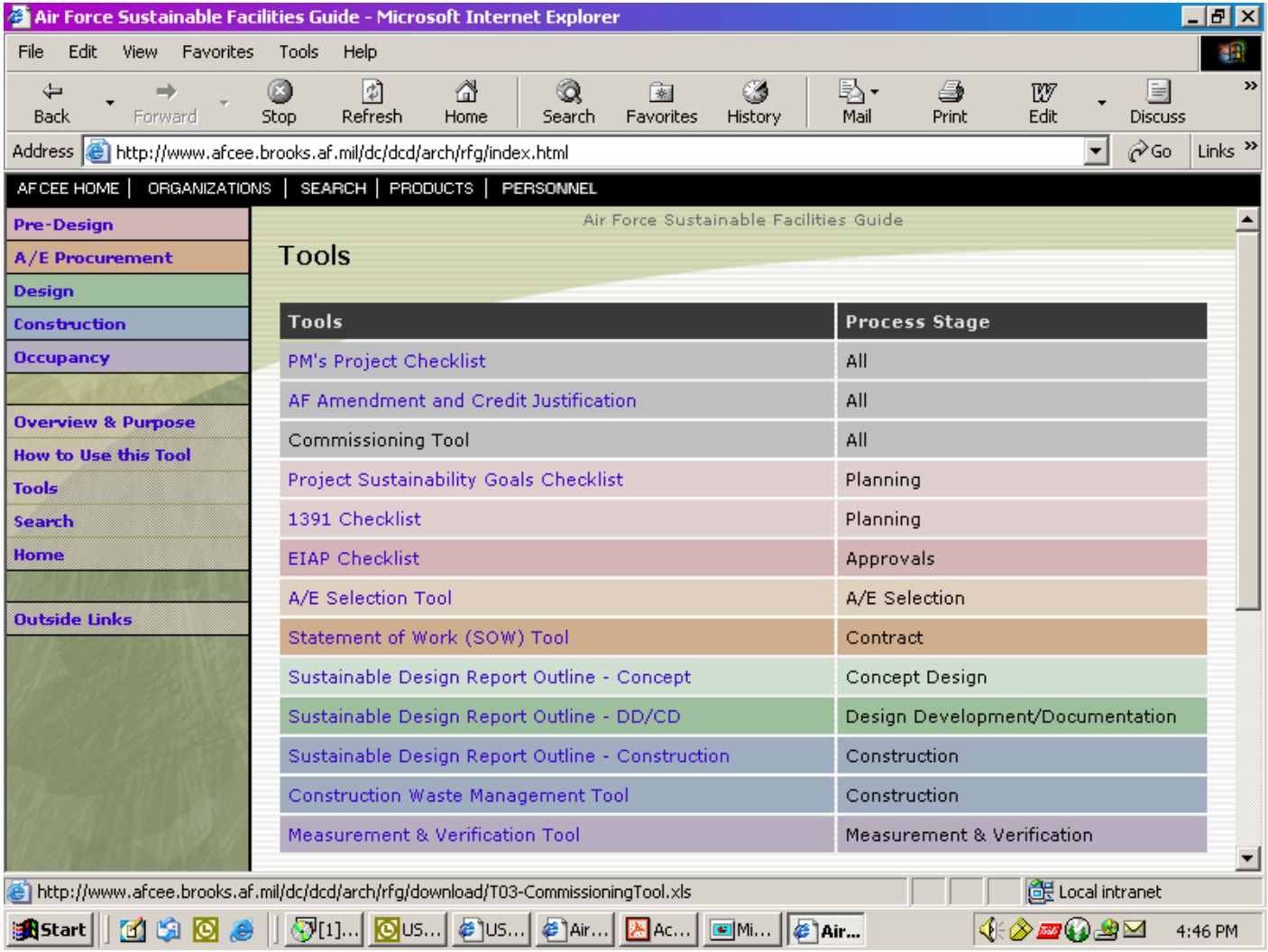
Other Tools Included in the Guide


Air Force Sustainable Facilities Guide - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://www.afcee.brooks.af.mil/dc/dcd/arch/rfg/index.html
Go Links
AFCEE HOME | ORGANIZATIONS | SEARCH | PRODUCTS | PERSONNEL
Pre-Design
A/E Procurement
Design
Construction
Occupancy
Overview & Purpose
How to Use this Tool
Tools
Search
Home
Outside Links
Air Force Sustainable Facilities Guide
Tools
Tools | Process Stage
PM's Project Checklist | All
AF Amendment and Credit Justification | All
Commissioning Tool | All
Project Sustainability Goals Checklist | Planning
1391 Checklist | Planning
EIAP Checklist | Approvals
A/E Selection Tool | A/E Selection
Statement of Work (SOW) Tool | Contract
Sustainable Design Report Outline - Concept | Concept Design
Sustainable Design Report Outline - DD/CD | Design Development/Documentation
Sustainable Design Report Outline - Construction | Construction
Construction Waste Management Tool | Construction
Measurement & Verification Tool | Measurement & Verification
http://www.afcee.brooks.af.mil/dc/dcd/arch/rfg/download/T03-CommissioningTool.xls
Local intranet
Start
4:46 PM

On-line, introductory course

- ***Target audience:*** Major construction project managers and team members
- ***Includes:***
  - Introduction to LEED™ Green Building Rating System
  - Review of AF policy
  - Overview of key sustainable development strategies
  - Discussion of implementation issues, teaming, integrated design process
  - Introduction to USAF Sustainable Facilities Guide
- ***Register at --*** **http://webu.brooks.af.mil**

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Does Anybody Use These Tools?

off the mark
by Mark Parisi
www.offthemark.com
EXCUSE ME A SEC... I WANT TO CHECK HOW MANY HITS I GOT ON MY WEBSITE...
www.offthemark.com

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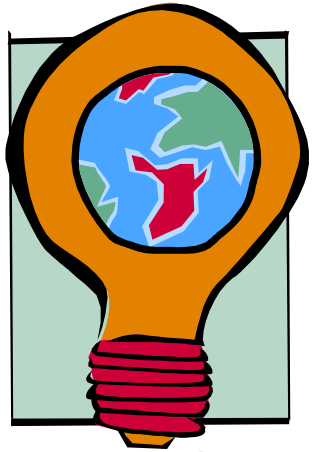
Samples of AF Green Building Projects

- ***Air Combat Command: several pilot projects including Barksdale AFB Fitness Center***
  - "Bronze" rating under LEED™ version 1.0. This is the first AF project to be certified by the US Green Building Council
- ***Air Force Reserve Command: March ARB C-17 Beddown***
  - Silver ratings expected under LEED™ version 2.0
- ***Air Force Material Command: Consolidated Support Facility, Edwards AFB, CA***
  - RFP required pursuit of Silver LEED™ rating



Consolidated Support Facility

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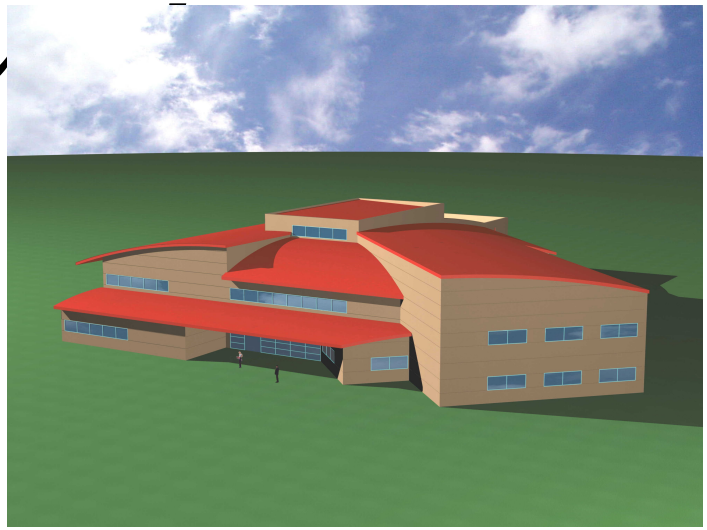
Edw

Project Description

- Design/Build new 49,000 sf two-story facility on vacant 13 acre site (7 acres to remain undisturbed)
- Office space supporting multiple user groups
- Site is the political center of the installation and will be one of the most visited public buildings
- AFMC designation as “Architecturally Significant Project”



Consolidated Support Facility

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Edwards AFB, CA

Current Status:

- Under construction (50% complete)
- ECD: 1 May 2004

Innovative Features:

- Use of Thermal Energy Storage (TES) system to reduce on-peak electrical demand due to the building cooling system
- Implementation of education & awareness program for building occupants regarding LEED™ goals and design components

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The Ultimate in Green Construction?

Beyond Green Buildings to Sustainability Action Plans: AFRC

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New effort by two AFRC bases: Homestead and March

The plans' scope covered base-wide operations

- Included all installation support operations, but not weapon systems (aircraft sorties)
- Aircraft operational requirements are beyond control of the installation - or even the host command

The focus was not just environmental sustainability

- Economic and human (social) impacts equally important - "People, Profits, Planet"
- "People" dimension as defined by AF Reserve Command consists of effects on the AF mission, AF personnel, and the surrounding communities

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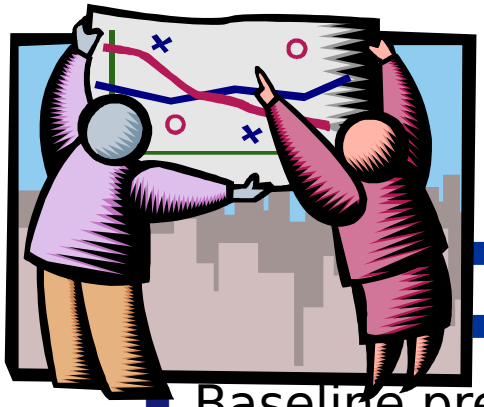
Sustainability Action Plans - Development



The process was similar to a Pollution Prevention Opportunity Assessment

- Develop base-specific sustainability goals
- Write a sustainability policy statement
- Baseline previous sustainability successes
- Identify projects needed to meet the new goals
- Prioritize projects based on cost, feasibility, potential benefits (considering “people, planet, and profits”)
- Develop an action plan to execute the top-tier projects
- Identify appropriate sustainability indicators and metrics
- Engage local stakeholders (regulatory, communities)

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Sustainability Action Plans – Goals and Metrics

Goals were set for eight "operational categories"

- Air Quality, Building Systems, Energy, Land Use, Materials/Wastes/Services, Natural/Cultural Resources, Transportation, and Water

We started out to develop "eco-efficiency" metrics

- Eco-efficiency measures the ratio of a "unit of environmental impact" to each "unit" of a product or service
- We never figured out an acceptable way to do this
- Providing information on sorties or manpower would allow comparison to other installations -- a bad idea with more base closures looming

Final approach: measure the base's progress toward meeting its own internal goals

- Unitless, dimensionless numbers – no external comparisons

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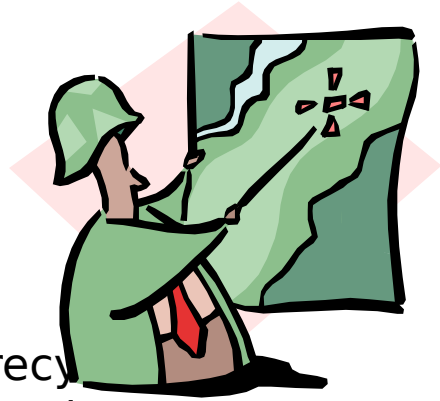
Sustainability Action Plans - Outcomes

The final Action Plans are installation roadmaps

- ***They identify short-, medium-, and long-range actions to move toward sustainability by the year 2020***
- ***Examples of priority-one projects for March ARB:***
  - ***Building Systems:*** Have a new building certified under the LEED™ rating system.
  - ***Energy:*** Establish procurement criteria requiring Energy Star ratings. Install photovoltaic exterior security lighting.
  - ***Land Use:*** Revise Master Plan using new GIS data to encourage sustainable patterns. Enhance pedestrian infrastructure.
  - ***Materials, Waste and Services:*** Implement C&D recy program. Use environmentally preferable cleaning products.



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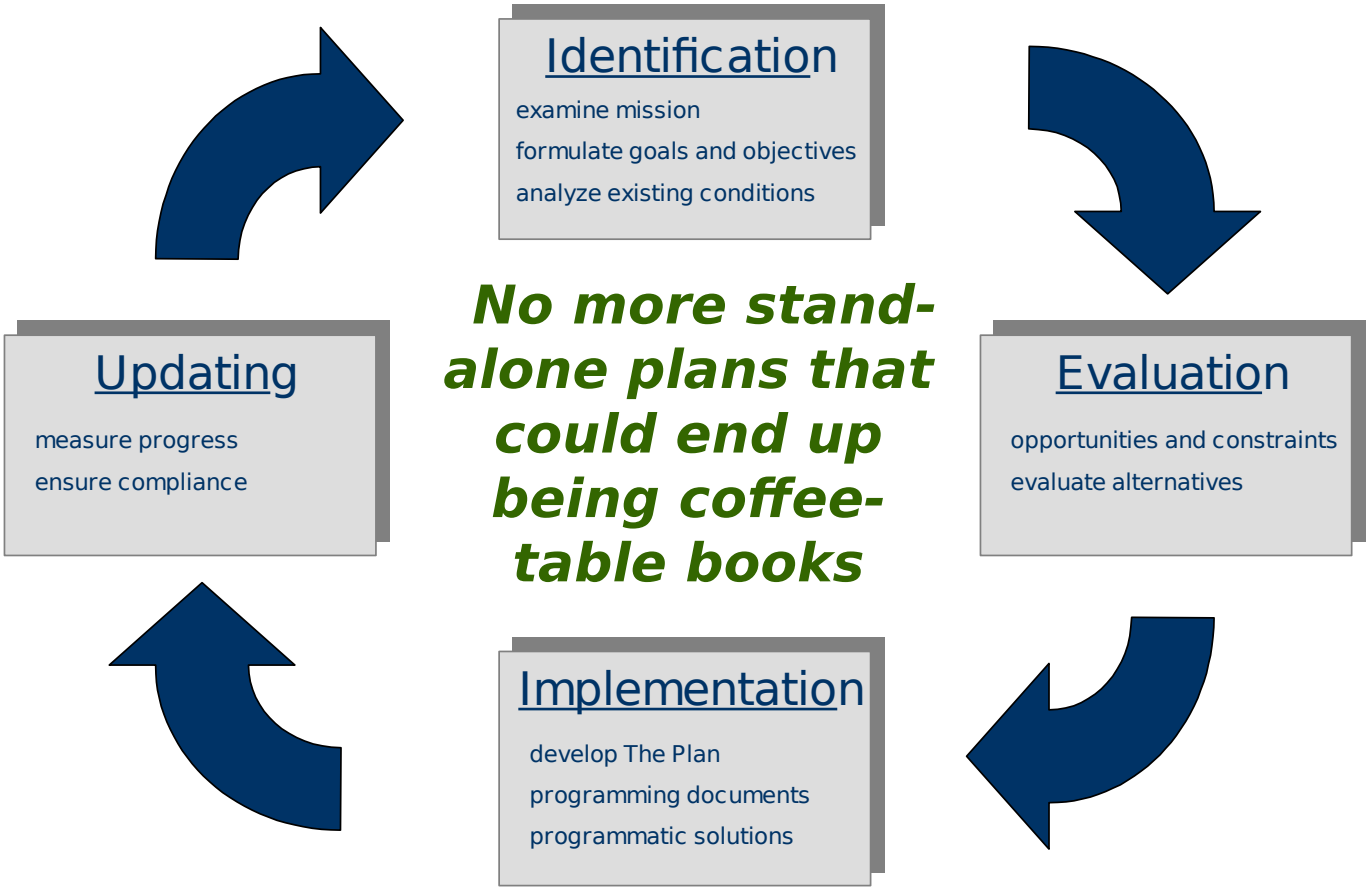
… And The Process Keeps Evolving

Future Plans will be integrated into the AF Master Planning structure



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For More Information

- ***Homestead ARB has a very comprehensive web site devoted to sustainable operations:***
  www.afrc.af.mil/482fw/MSG/SUSOPS/soindex.htm

- ***HQ AFRC web site includes information about ongoing sustainability initiatives, including the March ARB action plan:***

https://wwwmil.afrc.af.mil/HQ/CE/cev/cevq/Sustainability/index.htm

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What's Next? - Linking Sustainability to EMS

Sustainability should guide all operational decisions

- The goal is effective long-term mission support
- An ISO 14000 Environmental Management System (EMS) is the roadmap, and sustainability is the compass
- Issues and solutions identified in Sustainability Action Plans can become aspects, impacts and targets for the EMS

Most agencies have "green building" policies...

- The next step for the Air Force is to broaden our policy statements to address sustainability in operations beyond facilities
- We have included sustainability concepts in the Air Force guidance for EMS

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Frameworks for Sustainable Action

- ***Natural Capitalism***
- ***The Natural Step***
- ***Ecological Footprints***

"Natural Capitalism" Strategies for Business

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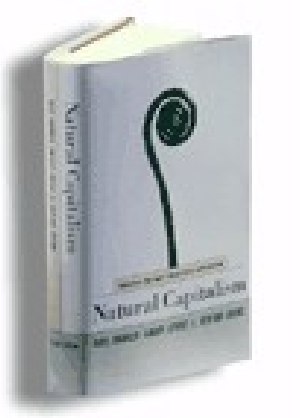
- ***"Natural Capitalism: Creating the Next Industrial Revolution" by Paul Hawken, Amory Lovins, and L. Hunter Lovins***



- ***Four interlinked principles:***
  - Increase resource efficiency and productivity
  - Eliminate the concept of waste – close the loop; mimic nature
  - Focus on service and resource flow instead of product procurement
  - Reinvest in natural capital to restore ecological diversity and productive capacity
- ***Book excerpts, downloadable chapters and more information: www.natcap.org***

The Natural Step

In a sustainable society, nature is NOT subject to systematically increasing:

(1) concentrations of substances extracted from earth's crust

(2) concentrations of substances produced by society

(3) degradation by physical means

and in that society...

(4) human needs are met worldwide

Four science-based principles for a sustainable society

Business assistance: assessments, strategy development, training and tools -- www.naturalstep.org

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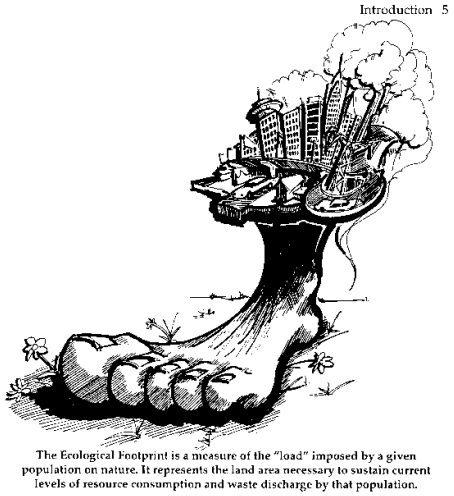
Ecological Footprints


Introduction 5
The Ecological Footprint is a measure of the "load" imposed by a given population on nature. It represents the land area necessary to sustain current levels of resource consumption and waste discharge by that population.

- The Ecological Footprint measures human demand on nature
- It shows how much biologically productive land we occupy to produce all the resource we consume, and to absorb our waste
- Nature provides an average of about 4.5 ac of bioproductive space for every person in the world – and we need to share that with all the other species too
- Credit for the concept goes to Dr. Mathis Wackernagel of the Ecological Footprint Network - **www.ecofoot.net**
- How big is your footprint? Calculate yours at **www.MyFootprint.org** (Average: 24 acres)

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Sustainable Living, Sustainable Business

- ***Use less gas, oil, coal; use more alternative energy***
  - www.eere.energy.gov
  - www.nrel.gov/reasn
  - www.awea.org
- ***Reduce the environmental effects of food, transportation, consumer goods and services***
  - www.ucsusa.org
  - www.rff.org
- ***Consume less***
  - www.use-less-stuff.com
- ***Encourage sustainable business practices***
  - www.bsdglobal.com
- ***Support equity for all people and equitable development for all nations***
  - www.undp.org
- ***Support smarter development***
  - www.smartgrowth.org
  - www.sustainable.doe.gov
- ***Choose organic and sustainably harvested products***
- ***Think smallest, not biggest (cars, homes)***
- ***Join with others - take action***

www.earthday.net/goals/solutions.stm

f you think you are too small to make a difference, try sleeping with a mosquito.
-- The Dalai Lama